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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,480	10/30/2003	Roy Clark	03-0012	3144

67059 7590 04/03/2007

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EXAMINER	
FICK, ANTHONY D	
ART UNIT	PAPER NUMBER
1753	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/699,480	CLARK, ROY	
	Examiner	Art Unit	
	Anthony Fick	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/30/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application .
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 through 7, 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Mook (U.S. 7,081,584).

Mook discloses an optical concentrator as shown in figure 12.

Regarding claim 1, the figure shows a primary lens, 260, mounted over a solar cell, 274, to focus sunlight over the solar cell surface and a secondary non-imaging concentrating element, 268, mounted intermediate the primary lens and the solar cell to redirect sunlight onto the solar cell. Mook also discloses the primary lens can be a Fresnel lens (column 12, paragraph 2).

Regarding claim 2, figure 12 shows the edge rays from the lens reflected to the periphery of the active surface of the solar cell.

Regarding claim 3, the secondary non-imaging concentrating element has the same structure as applicants, and therefore will perform the same redirection of light as claimed. Further, the configuration of figure 12 will redirect rays within the periphery of the solar cell if the concentrator is misaligned by an angle.

Regarding claims 4 through 6, Mook discloses a variety of Fresnel lenses including curved, linear and circular (figures 15, 16B and 22).

Regarding claim 7, figure 12 shows a concentrating element that has a V-trough shape.

Regarding claim 10, figure 12 shows a primary lens, 260, mounted over a solar cell, 274, to focus sunlight over the solar cell surface and a secondary non-imaging concentrating element, 268, mounted intermediate the primary lens and the solar cell to redirect sunlight onto the solar cell. Mook also discloses the primary lens can be a Fresnel lens (column 12, paragraph 2). Figure 12 shows the edge rays from the lens reflected to the periphery of the active surface of the solar cell. In figure 12, the secondary non-imaging concentrating element has the same structure as applicants, and therefore will perform the same redirection of light as claimed. Further, the configuration of figure 12 will redirect rays within the periphery of the solar cell if the concentrator is misaligned by an angle.

Regarding claim 11, figure 12 also shows the entrance sized to receive the edge rays of the lens and an exit sized to the periphery of the solar cell active surface.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 through 5 and 7 through 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill (U.S. 4,069,812).

O'Neill discloses an optical concentrator as shown in figure 1.

Regarding claim 1, the concentrator in figure 1 comprises a Fresnel lens, 90, mounted to focus sunlight onto a surface. O'Neill discloses a possible embodiment in figure 7 of focusing the sunlight onto a solar cell, 424. O'Neill further discloses another embodiment in which a secondary non-imaging concentrating element is mounted intermediate the Fresnel lens and the focusing target, elements 201 and 202 in figure 5.

The difference between O'Neill and claim 1 is the requirement of both a solar cell and a secondary non-imaging concentrator.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two embodiments of O'Neill into a single device; in essence to replace the pipe in figure 5 with a solar cell as the pipe in figure 4 was replaced with a solar cell to arrive at figure 7, because the solar cells produce electricity directly from the concentrated sunlight and solar cells in the base of figure 5 would have a smaller area, thus providing more economic advantages (column 14, paragraph 1). Because O'Neill already replaced a tube for solar cells to move from figure 4 to figure 7, one would have a reasonable expectation of success from the replacement of the tube in figure 5 with solar cells.

Regarding claims 2 and 3, the secondary non-imaging concentrator has the same structure as applicants and will perform the same redirection of light required by the claims.

Regarding claims 4 and 5, figure 1 shows the Fresnel lens is curved and linear.

Regarding claims 7 and 8, figure 5 shows the secondary element is a V-trough and the line of the V-trough will match a straight line fit to one of an infinite amount of possible hyperbolic concentrators.

Regarding claim 9, figure 5 also shows the exit of the secondary element sized to the periphery of the tube, hence the combination would have the exit sized to the periphery of the solar cell element.

Regarding claims 10 and 11, the above arguments for claims 1, 2, 3 and 9 also hold for these claims.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill as applied to claims 1 through 5 and 7 through 11 above, and further in view of Olah (U.S. 6,399,874).

The disclosure of O'Neill is as stated above for claims 1 through 5 and 7 through 11.

The difference between O'Neill and claim 6 is the requirement of a circular Fresnel lens.

Olah teaches a solar energy module with a Fresnel lens for use as a concentrator. As shown in figure 1, Olah teaches circular Fresnel lenses to focus light onto solar cells.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a circular Fresnel lens within the device of O'Neill because the choice of a Fresnel lens is dependent on the specific application and the work of

Olah shows that circular lenses are known within the art at the time the invention was made. Because Olah and O'Neill are concerned with concentrating light onto solar cells, one would have a reasonable expectation of success from the combination. Thus the combination meets the claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday - Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick AOF
AU 1753
March 30, 2007

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